

PERIYAR UNIVERSITY

**ARIGNAR ANNA GOVERNMENT ARTS COLLEGE,
VADACHENNIMALAI, ATTUR.**

DEPARTMENT OF MATHEMATICS

III-B.Sc Mathematics (2023-2024)

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PROJECT TITLE	Estimation of Business Expenses
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CONTENTS

1.INTRODUCTION

1.1. OVERVIEW

1.2. PURPOSE

2. PROBLEM DEFINITION & DESIGN THINKING

2.1. EMPATHY MAP

2.2. BRAINSTORMING MAP

3. RESULT

3.1. DASHBOARD

3.1.1. DASHBOARD 1

3.1.2. DASHBOARD 2

3.1.3. DASHBOARD 3

3.2. STORY 1

3.2.1. STORY 1

3.2.2. STORY 1

3.2.3. STORY 1

3.2.4. STORY 1

3.2.5. STORY 1

3.3. STORY 2

3.3.1. STORY 2

3.3.2. STORY 2

3.3.3. STORY 2

3.3.4. STORY 2

3.3.5. STORY 2

4. ADVANTAGES & DISADVANTAGES

5. APPLICATIONS

6.FUTURE SCOPE

7. DASHBOARD & STORY EMBED CODE

7.1. DASHBOARD EMBED

7.1.1. DASHBOARD EMBED 1

7.1.2. DASHBOARD EMBED 2

7.1.3. DASHBOARD EMBED 3

7.2. STORY

7.2.1. STORY 1

7.2.2. STORY 2

8. CONCLUSION

CATEGORY:

Data Literacy with Tableau

PROJECT TITLE:

Estimation of Business Expenses

1. INTRODUCTION:

In the ever-evolving landscape of business management, accurate estimation and control of expenses are paramount. This project focuses on providing comprehensive visualizations for various expense categories to facilitate informed decision-making and financial planning. This report deals into the fascinating realm of business expenses and provides a visual exploration of the various expenditures incurred by different businesses. It showcases the distribution of expenses, identifies key cost drivers, and highlights areas of potential optimization or concern. The visual representations allow for intuitive analysis, facilitating a deeper understanding of expenditure patterns and their implications for business performance. Decision-makers, financial analysts, and stakeholders can gain valuable insights into the financial health of businesses, identify areas of inefficiency or opportunity, and make informed decisions to optimize resources and drive growth. To Extract the Insights from the data and put the data in the form of visualizations, Dashboards and Story we employed Tableau tool.

1.1 Overview

The project aims to develop a robust visualization tool that empowers businesses to gain valuable insights into their expenditures. By creating visual representations of key expense categories, organizations can better understand their financial landscape and take proactive measures to optimize spending.

1.2 Purpose

The primary purpose of this project is to enable businesses to harness the power of data visualization for expense management. Through this project, the following objectives can be achieved:

- ❖ **Enhanced Expense Visibility:**

Visualizations will offer a clear, concise, and real-time view of different expense categories, making it easier for organizations to identify trends and anomalies.

- ❖ **Data-Driven Decision-Making:**

By visualizing annual payroll, advertisement cost, contract labour, employee benefits, equipment costs, and other crucial expenses, businesses can make data-driven decisions to control costs and allocate resources effectively.

- ❖ **Improved Financial Planning:**

The project's purpose includes providing businesses with a tool that helps in forecasting future expenses, enabling better budgeting and financial planning.

- ❖ **Optimized Resource Allocation:**

Businesses can use the visualizations to allocate resources more efficiently, identifying areas where cost reduction or optimization is possible.

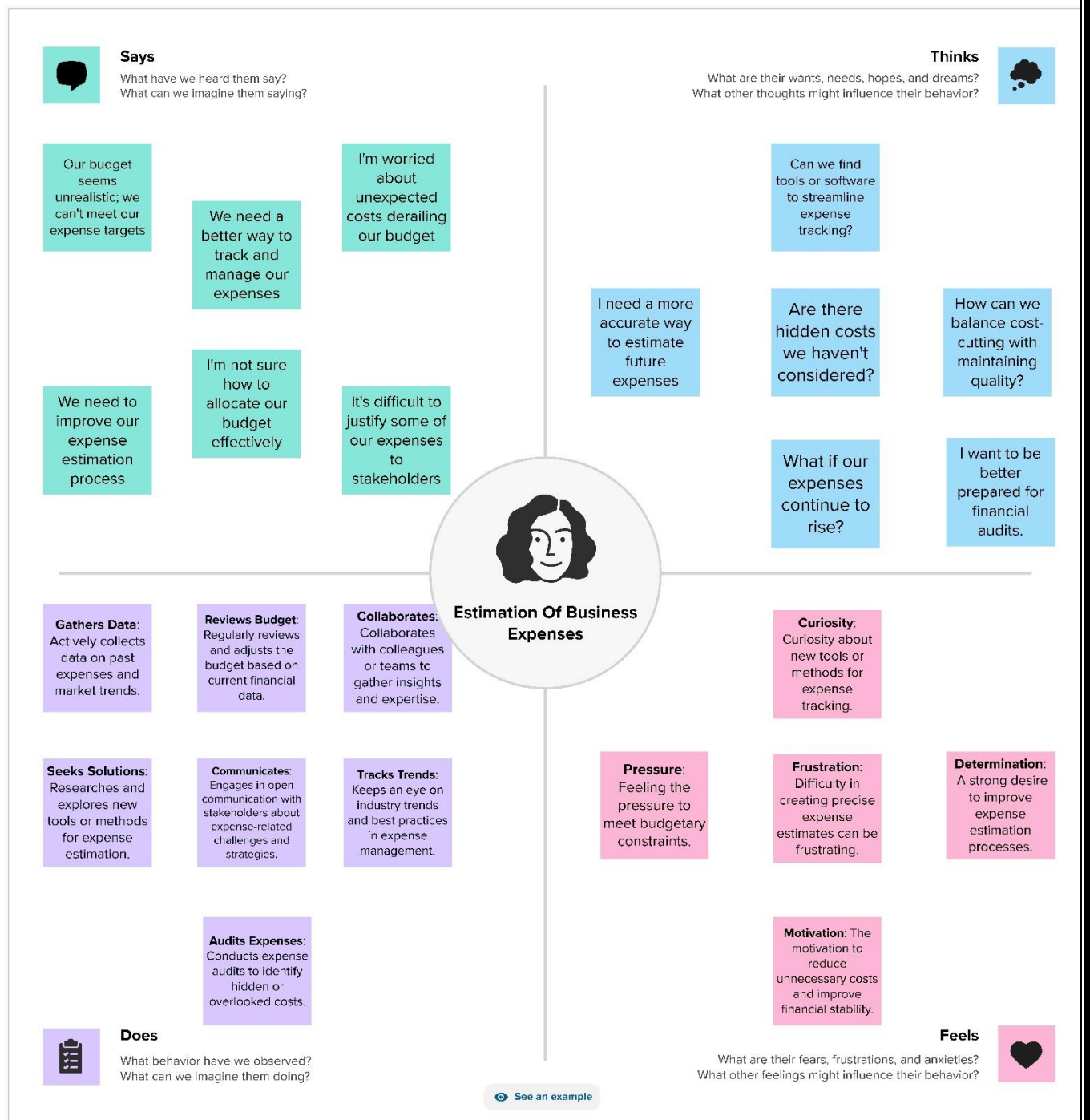
- ❖ **Performance Monitoring:**

Visualization of expenses can aid in monitoring the performance of various cost centres, helping organizations make timely adjustments to meet their financial goals.

In the subsequent sections of this report, we will delve deeper into each visualization topic, examining its significance, advantages, and potential applications. Furthermore, we will explore how these visualizations can be integrated into a comprehensive dashboard and narrative to provide a holistic understanding of business expenses.


2. PROBLEM DEFINITION & DESIGN THINKING:

2.1. EMPATHY MAP:



2.2. Brainstorming Map:

Template



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 🕒 10 minutes to prepare
- 🕒 1 hour to collaborate
- 👥 2-8 people recommended

➔

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

➔

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

A

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B

Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C


Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) ➔

PROBLEM

The estimation of business expenses faced by problems lack of vision, adoption, customer satisfaction etc. more problems how to solve?



Key rules of brainstorming

To run an smooth and productive session

- 🗣️ Stay in topic.
- 💡 Encourage wild ideas.
- ⏸️ Defer judgment.
- 👂 Listen to others.
- 🗣️ Go for volume.
- 👁️ If possible, be visual.



Need some inspiration?

See a finished version of this template to kickstart your work.

[Open example](#) ➔

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

TIP

You can select a sticky note and hit the pencil (switch to sketch) icon to start drawing!

Person 1

Start by analyzing any available historical financial data. If none exists, consider industry benchmarks or consult with industry experts for guidance.

Conduct thorough market research and regularly review and update your sales forecasts to ensure they reflect current market conditions.

Carefully plan and budget for all employee-related expenses, including salaries, benefits, training, and recruitment.

Person 2

Incorporate an inflation factor into your expense estimates to account for rising costs over time.

Negotiate contracts with suppliers to secure better terms, discounts, or payment arrangements to reduce costs.

Regularly track your actual expenses against your budget and make adjustments as needed. Stay proactive in identifying and addressing budgetary issues.

Person 3

Recognize seasonal trends in your industry and adjust your budget to accommodate increased or decreased expenses during certain times of the year.

Build a contingency fund in your budget to cover unexpected expenses or emergencies.

Prioritize expenses by distinguishing between essential and non-essential costs. Trim or eliminate non-essential expenses when necessary.

Person 4

Continuously assess resource allocation to ensure that funds and resources are being utilized optimally.

Conduct a comprehensive expense audit to identify hidden or overlooked costs, such as maintenance, compliance fees, or regulatory expenses.

Identify variable expenses that can fluctuate and create scenarios with high and low estimates to account for variability.



3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Continuously assess resource allocation to ensure that funds and resources are being utilized optimally.

Identify variable expenses that can fluctuate and create scenarios with high and low estimates to account for variability.

Conduct a comprehensive expense audit to identify hidden or overlooked costs, such as maintenance, compliance fees, or regulatory expenses.

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Continuously assess resource allocation to ensure that funds and resources are being utilized optimally.

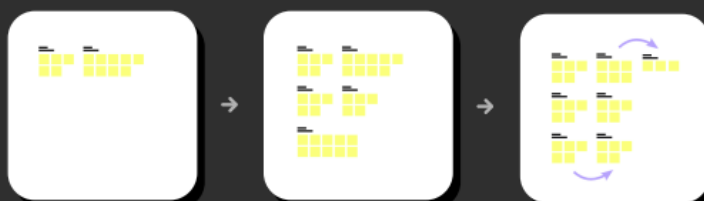
Regularly track your actual expenses against your budget and make adjustments as needed. Stay proactive in identifying and addressing budgetary issues.

Recognize seasonal trends in your industry and adjust your budget to accommodate increased or decreased expenses during certain times of the year.

Carefully plan and budget for all employee-related expenses, including salaries, benefits, training, and recruitment.

Conduct thorough market research and regularly review and update your sales forecasts to ensure they reflect current market conditions.

Prioritize expenses by distinguishing between essential and non-essential costs. Trim or eliminate non-essential expenses when necessary.



4

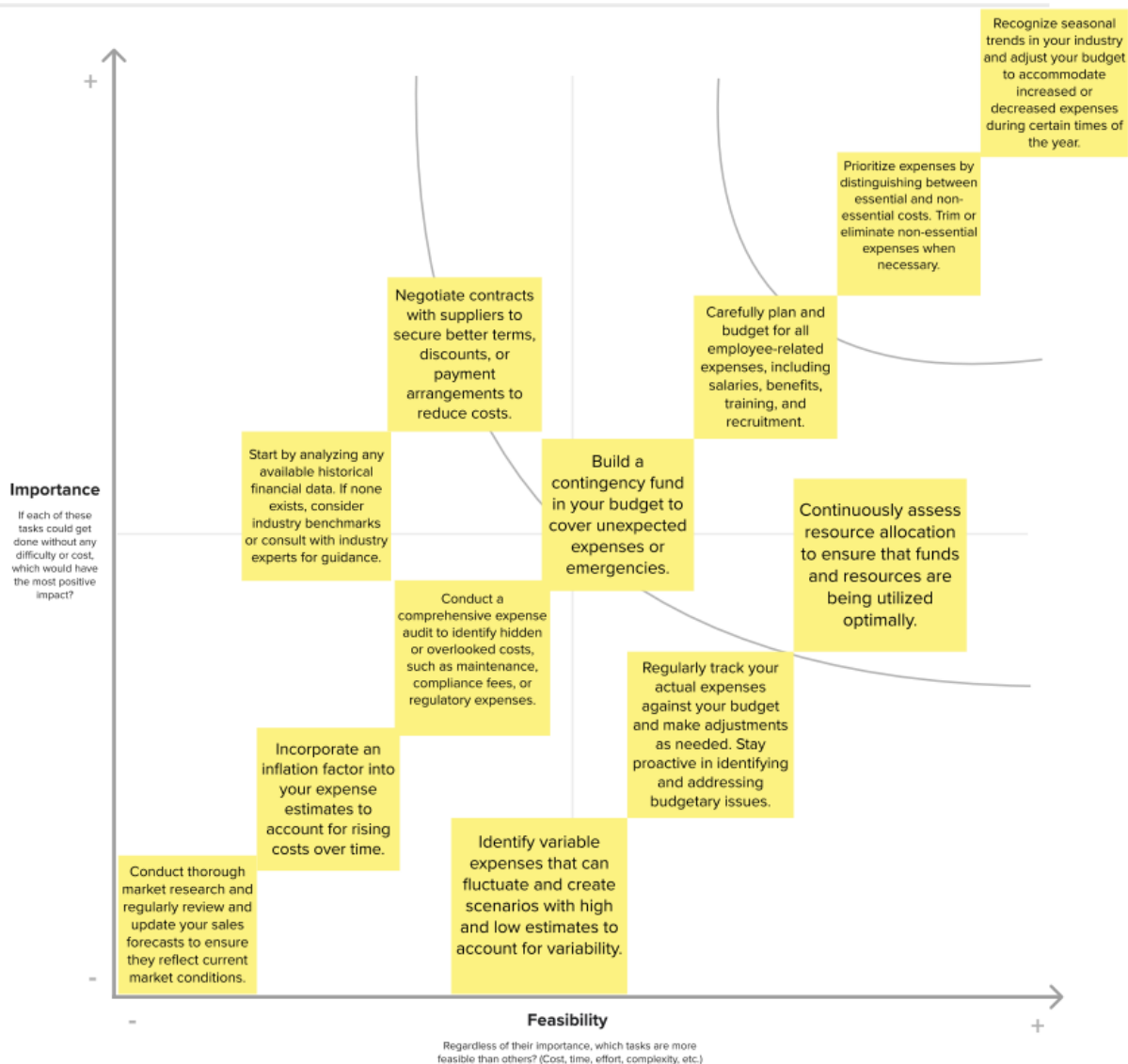
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes

TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.



→



→





After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

A

Share the mural

Share a **view link** to the mural with stakeholders to keep them in the loop about the outcomes of the session.

B

Export the mural

Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward



Strategy blueprint

Define the components of a new idea or strategy.

[Open the template →](#)



Customer experience journey map

Understand customer needs, motivations, and obstacles for an experience.

[Open the template →](#)



Strengths, weaknesses, opportunities & threats

Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.

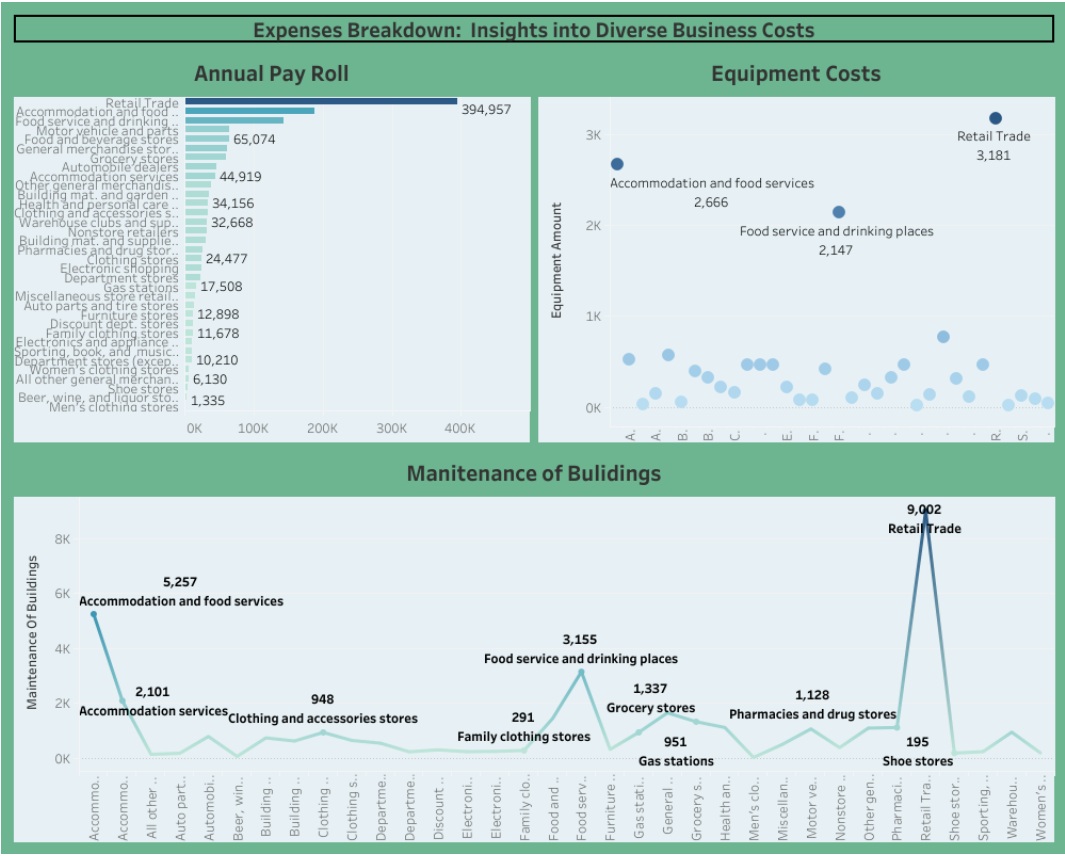
[Open the template →](#)

 [Share template feedback](#)

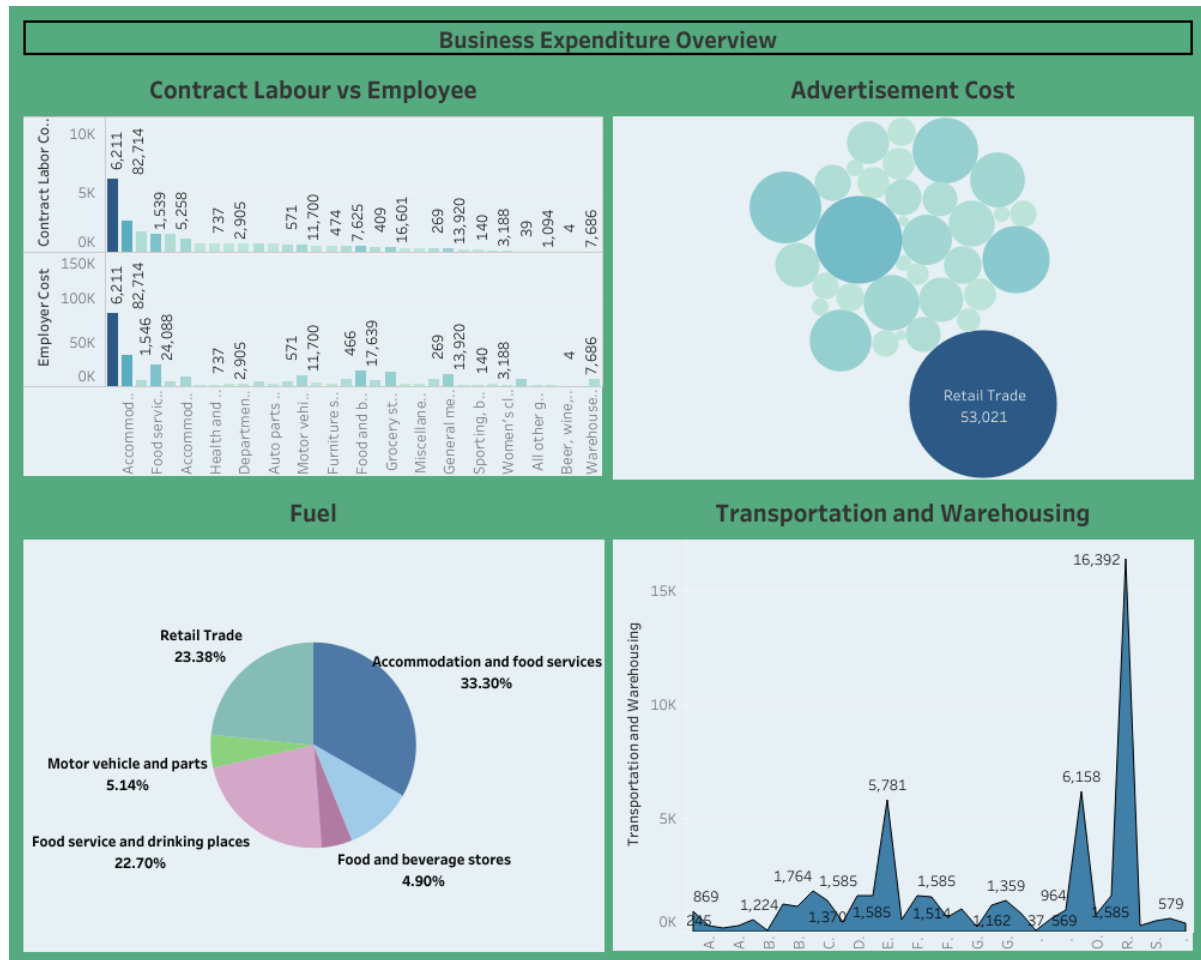
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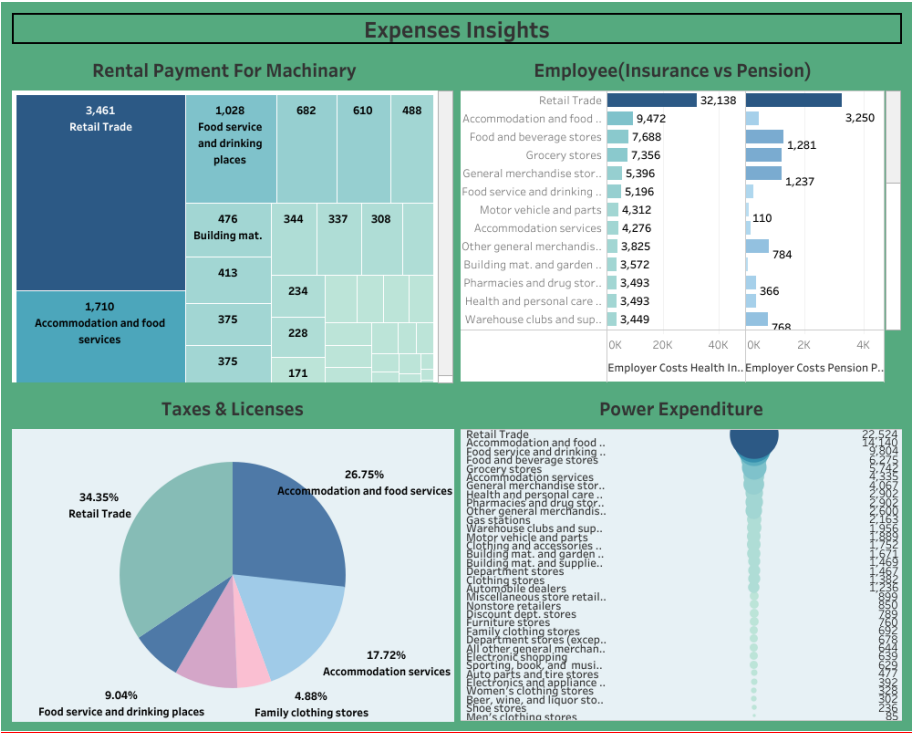
3.1.1 Dashboard 1:



3.1.2 Dashboard 2:

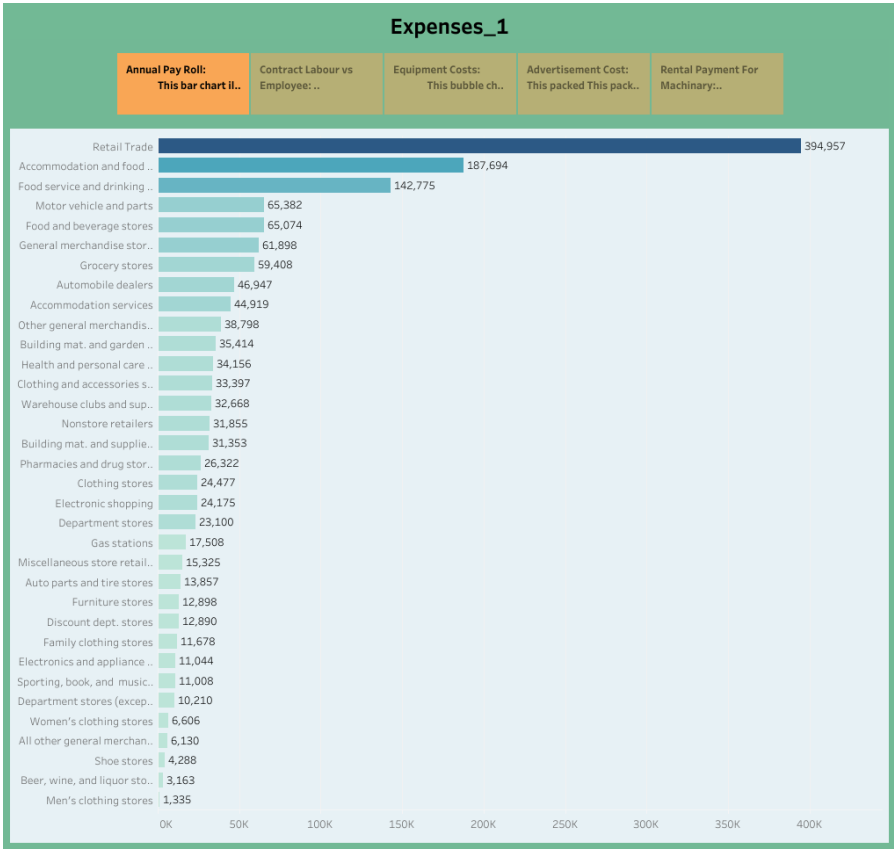


3.1.3 Dashboard 3:



3.2. Story 1:

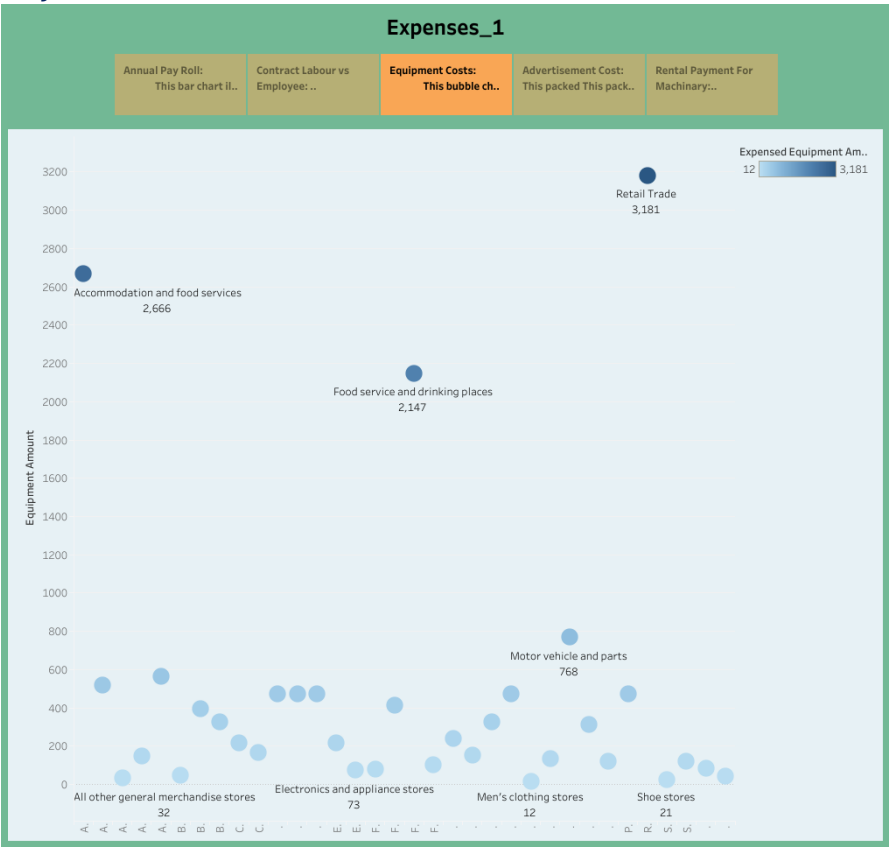
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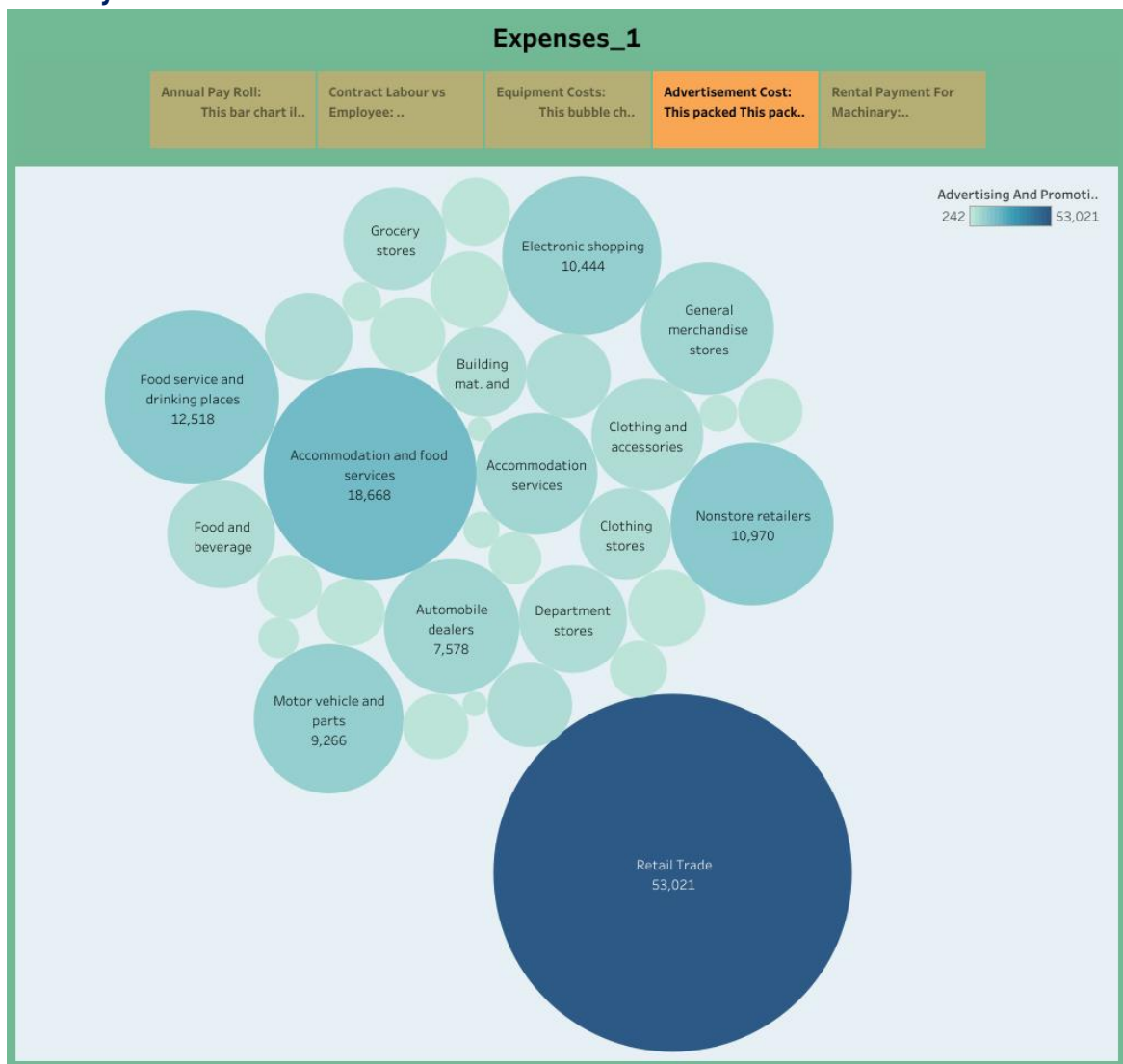
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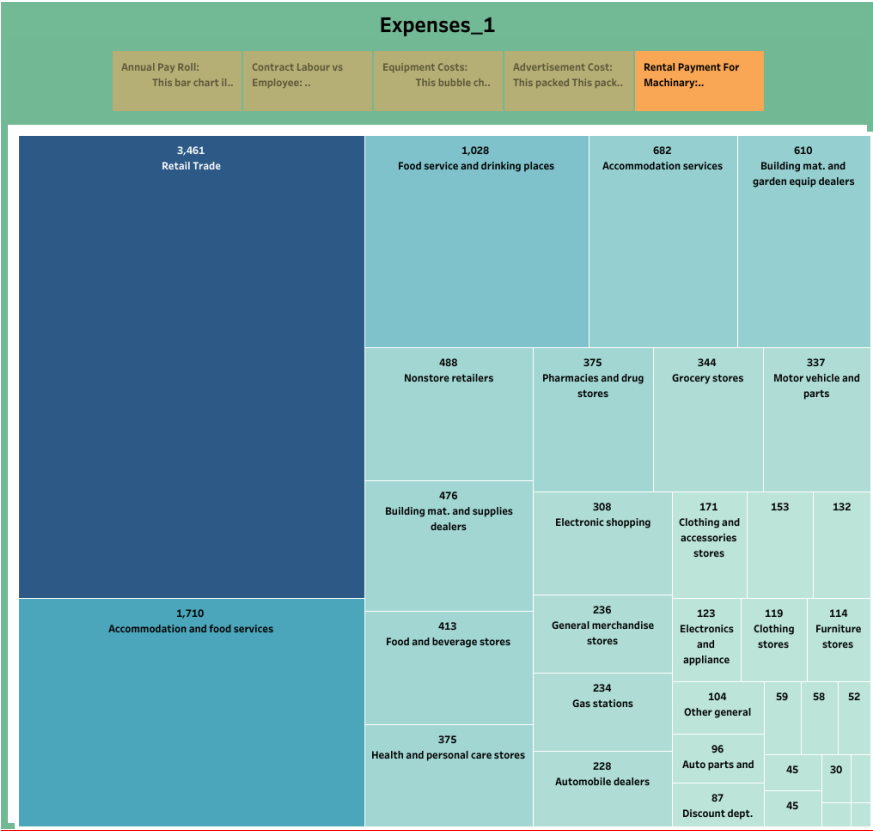
3.2.3 Story 1:



3.2.4 Story 1:

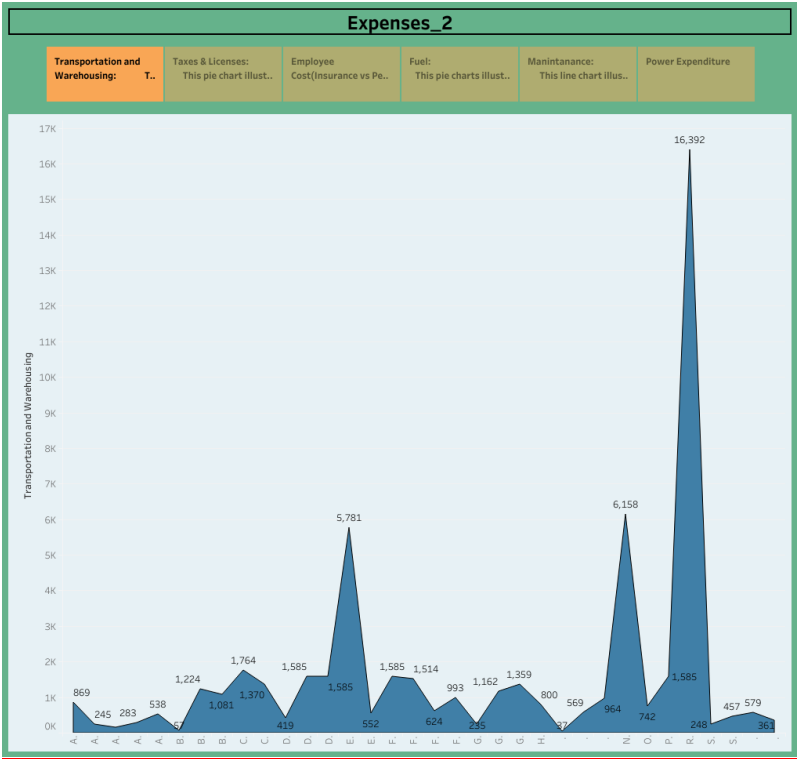


3.2.5 Story 1:

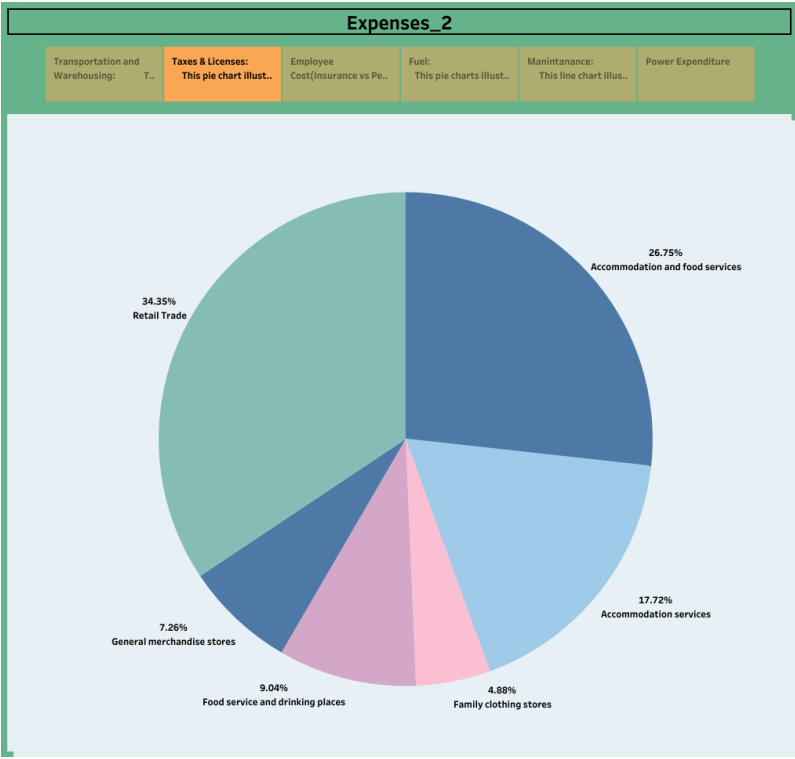


3.3 Story 2:

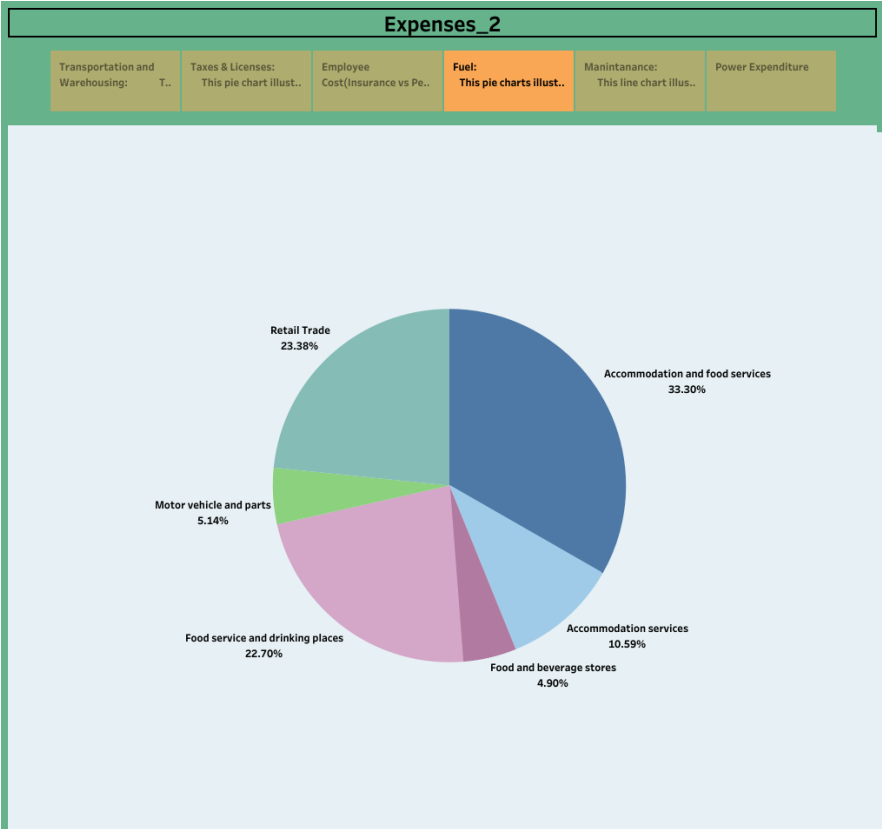
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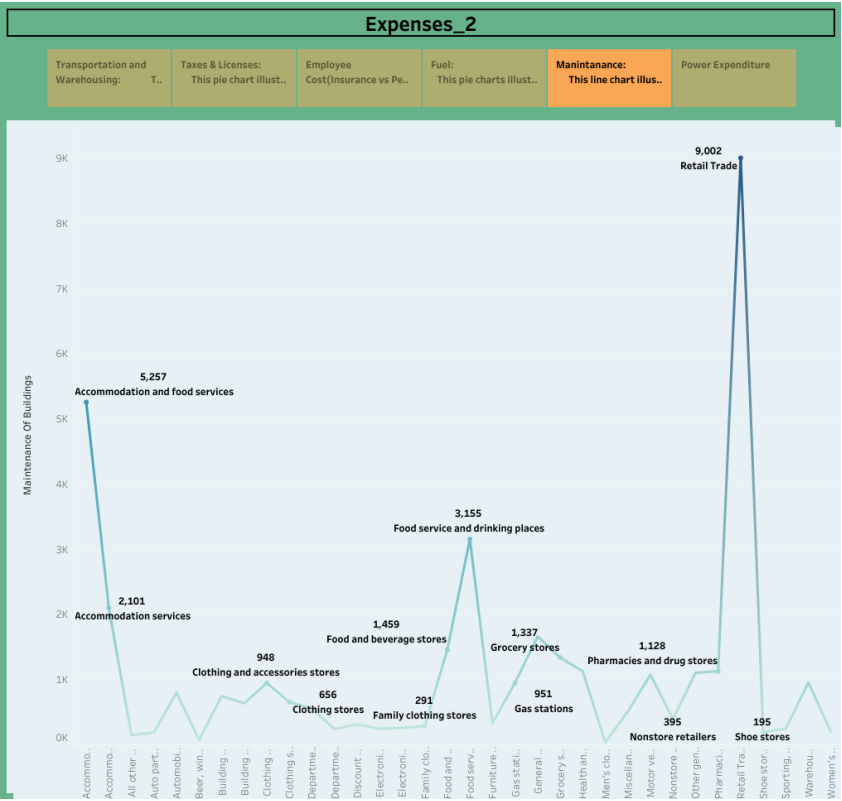
3.3.2 Story 2:



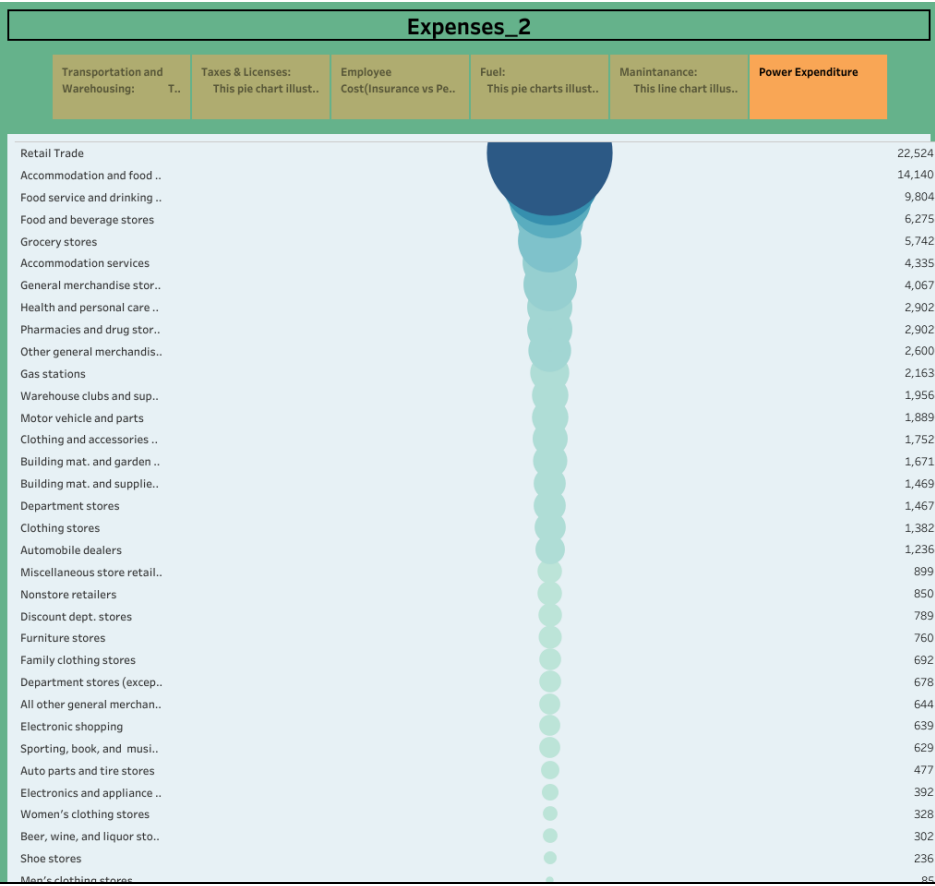
3.3.3 Story 2:



3.3.4 Story 2:



3.3.5 Story 2:



4. ADVANTAGES & DISADVANTAGES:

1. Annual Payroll:

Advantages:

- Accurate tracking of employee compensation.
- Enables budgeting and financial planning.
- Facilitates identification of labour cost trends.

Disadvantages:

- Limited insights into individual employee performance.
- May not account for variable compensation components.

2. Advertisement Cost:

Advantages:

- Tracks marketing expenses effectively.
- Assesses the effectiveness of advertising campaigns.
- Supports data-driven marketing decision-making.

Disadvantages:

- May not consider long-term brand-building benefits.
- Does not account for non-monetary brand awareness.

3. Contract Labour vs. Employee:

Advantages:

- Helps evaluate the cost-effectiveness of hiring practices.
- Provides insights into workforce flexibility.
- Assists in compliance with labour laws.

Disadvantages:

- Simplified view, may not capture the quality of work.
- Does not reflect the full impact on company culture.

4. Employee (Insurance vs. Pension):

Advantages:

- Manages employee benefits efficiently.
- Attracts and retains talent.
- Provides employee financial security.

Disadvantages:

- Can be costly for employers.
- Not immediately valued by all employees.

5. Equipment Costs:

Advantages:

- Tracks equipment procurement expenses.
- Supports maintenance and replacement decisions.
- Optimizes equipment utilization.

Disadvantages:

- Does not consider indirect equipment costs.
- May not account for potential revenue from equipment.

6. Fuel:

Advantages:

- Monitors fuel expenses for vehicles and equipment.
- Supports fuel efficiency improvements.
- Aids in budgeting for transportation costs.

Disadvantages:

- May not consider alternative energy sources.
- May not account for fuel price fluctuations.

7. Maintenance of Buildings:

Advantages:

- Tracks building maintenance costs effectively.
- Supports proactive facility management.
- Enhances safety and compliance.

Disadvantages:

- Does not account for long-term building value.
- May not capture the cost of deferred maintenance.

8. Power Expenditure:

Advantages:

- Monitors energy costs and usage.
- Supports energy efficiency initiatives.
- Optimizes power consumption.

Disadvantages:

- Does not consider energy source sustainability.
- May not capture the full impact of energy-saving measures.

9. Rental Payment Machinery:

Advantages:

- Tracks expenses related to machinery rentals.
- Assists in budgeting for rental costs.
- Supports decision-making on equipment purchase vs. rental.

Disadvantages:

- May not consider long-term cost comparisons.
- Doesn't account for potential benefits of renting in terms of flexibility.

10. Taxes & Licenses:

Advantages:

- Ensures compliance with tax and licensing requirements.
- Facilitates financial planning by accounting for taxes.
- Aids in minimizing tax liabilities legally.

Disadvantages:

- May not account for all tax deductions or incentives.
- Subject to changes in tax regulations.

11. Transportation:

Advantages:

- Monitors transportation-related expenses effectively.
- Supports route optimization and cost reduction.
- Enhances supply chain management.

Disadvantages:

- May not consider external factors affecting transportation costs.
- Doesn't account for potential revenue generation from transportation services.

These advantages and disadvantages offer a comprehensive view of the proposed solution for each of the project visualization topics in your "Estimation of Business Expenses" project.

5. APPLICATIONS:

The "Estimation of Business Expenses" solution has a wide range of applications in data analytics, making it a valuable asset for organizations across various sectors. In finance and accounting, it aids in accurate expense forecasting, budgeting, and financial planning. In marketing, it helps optimize advertisement costs and assess campaign effectiveness. HR departments can use it to make informed decisions regarding contract labour vs employees and employee benefit choices. For operations and logistics, it assists in tracking equipment, fuel, transportation, and maintenance costs. Compliance and legal departments benefit from its capability to manage taxes and licenses. The dashboard and storytelling aspects offer executives and stakeholders a comprehensive view and understanding of the organization's financial health. Overall, this solution is a versatile tool for data-driven decision-making in numerous business domains.

6. FUTURE SCOPE:

My project, "Estimation of Business Expenses," has laid a strong foundation for improved financial management and expense estimation. However, there is ample opportunity for future enhancements and advancements in this field. Here are some potential areas for development and expansion:

- Advanced Predictive Analytics:

In the future, we can incorporate advanced predictive analytics to forecast business expenses more accurately. Machine learning models can be employed to analyse historical data and identify trends, enabling organizations to proactively plan for upcoming expenses.

- Integration with Accounting Software:

Enhancing our solution to seamlessly integrate with popular accounting software packages will offer businesses a more comprehensive financial management tool. This integration can streamline expense tracking and reporting processes, providing real-time insights.

- Mobile Application:

Developing a mobile application for expense estimation and tracking can empower businesses to manage their finances on the go. This mobile extension will provide convenience and accessibility, catering to the increasingly mobile workforce.

- Enhanced Security Measures:

With the growing importance of data security, future iterations of our project can incorporate advanced security measures to protect sensitive financial data. Robust encryption, multi-factor authentication, and compliance with data protection regulations will be crucial.

- Customizable Reporting:

Providing organizations with the ability to create custom reports and dashboards tailored to their specific needs and preferences will be a valuable addition. Customization options will enable businesses to focus on the data that matters most to them.

- Benchmarking and Industry Comparisons:

Including benchmarking capabilities will allow businesses to compare their expense patterns with industry peers, identifying areas where they can improve and remain competitive.

- Real-time Data Updates:

Enabling real-time data updates will ensure that businesses always have the most current information at their fingertips. This feature can be particularly beneficial in fast-paced industries where expenses fluctuate frequently.

- Enhanced Storytelling:

Continuing to refine the storytelling component of our project will help organizations communicate financial insights more effectively. Storytelling can evolve to offer dynamic narratives that adapt to changing data.

- Expanded Data Sources:

Incorporating a wider range of data sources, such as external market data and economic indicators, can provide businesses with a more holistic view of the factors influencing their expenses.

- Machine Learning for Anomaly Detection:

Leveraging machine learning algorithms for anomaly detection can help businesses quickly identify irregular expense patterns, potentially indicating fraud or inefficiencies.

7.DASHBOARD & STORY EMBED CODE:

7.1. DASHBOARD:

7.1.1 DASHBOARD 1:

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7.2 STORY

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value='https://public.tableau.com/static/images/AL/ALLPROJECTS/Story2/1.png' />
<param name='animate_transition' value='yes' /><param name='display_static_image' value='yes' /><param
name='display_spinner' value='yes' /><param name='display_overlay' value='yes' /><param name='display_count' value='yes'
/><param name='language' value='en-US' /><param name='filter' value='publish=yes' /></object></div> <script
type='text/javascript'> var divElement = document.getElementById('viz1696818948065'); var vizElement =
divElement.getElementsByTagName('object')[0]; vizElement.style.width='1016px';vizElement.style.height='991px';
var scriptElement = document.createElement('script'); scriptElement.src =
'https://public.tableau.com/javascripts/api/viz_v1.js'; vizElement.parentNode.insertBefore(scriptElement,
vizElement); </script>
```

7. CONCLUSION:

In this comprehensive endeavour to estimate and manage business expenses, we have delved into various facets of financial management, offering valuable insights and tools for organizations across diverse industries. Through the visualization topics explored, ranging from Annual Payroll to Taxes & Licenses, we have provided a multifaceted approach to understanding and optimizing expense data. Throughout our journey, we have uncovered several key findings and observations. We learned that accurate expense estimation is paramount for effective financial planning and decision-making. The visualizations and data analytics tools we developed have empowered businesses to gain better control over their expenditure patterns, leading to improved budget allocation and cost savings. Furthermore, we emphasized the significance of data-driven insights in addressing challenges related to contract labour, employee benefits, and equipment procurement. By leveraging our solution, organizations can make informed choices regarding their workforce composition and resource allocation, thereby enhancing efficiency and compliance. Our exploration into maintenance costs, power expenditures, and transportation expenses underscored the importance of tracking and optimizing these critical areas of business expenditure. The visualization topics provided actionable insights to streamline operations, reduce inefficiencies, and improve resource allocation. The creation of a user-friendly Dashboard and a compelling Storytelling component has enhanced transparency and communication within organizations. Decision-makers now have access to a centralized view of expense data and a narrative that contextualizes the significance of financial trends. In conclusion, the "Estimation of Business Expenses" project has been a journey into the heart of financial management, offering a comprehensive solution for businesses to enhance their expense estimation, tracking, and decision-making processes. By leveraging the tools and insights provided, organizations can position themselves for improved financial health, increased efficiency, and better-informed resource allocation in an ever-evolving business landscape. The journey continues as we explore future enhancements and applications, ensuring that businesses remain competitive and agile in the years to come.